EXPERT REPORT

BY

BILLY R. CLAY MS, DVM, DABVT

FOR
The Defendants in the:

STATE OF OKLAHOMA, ex rel, W. A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA, and OKLAHOMA SECRETARY OF THE ENVIRONMENT C. MILES TOLBERT, in his capacity as the TRUSTEE FOR NATURAL RESOURCES FOR THE STATE OF OKLAHOMA,

Plaintiff

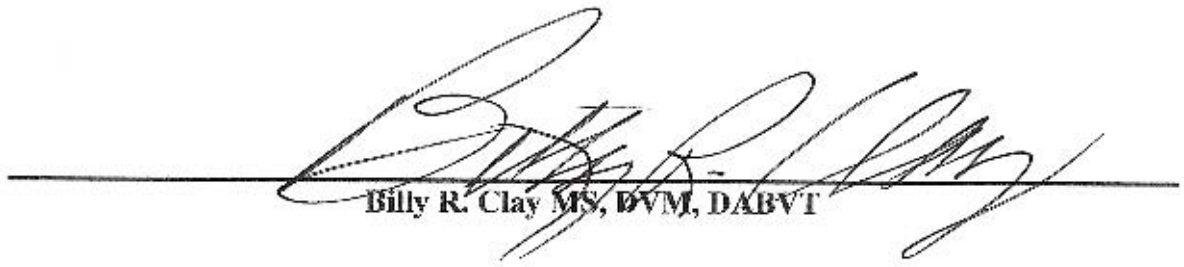
VS.

TYSON FOODS, INC., TYSON POULTRY, INC., TYSON CHICKEN, INC., COBB-VANTRESS, INC., CAL-MAINE FOODS, INC. CAL-MAINE FARMS, INC., CARGILL, INC., CARGILL TURKEY PRODUCTION, LLC, GEORGE'S, INC., GEORGE'S FARMS, INC., PETERSON FARMS, INC., SIMMONS FOODS, INC. AND WILLOWBROOK FOODS, INC.,

Defendants

CASE NO. 05-CV-0329 GKF-SAJ.
IN THE U.S. DISTRICT COURT, NORTHERN DISTRICT OF OKLAHOMA

November 29, 2008



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II. OPINIONS

1. Poultry litter like other livestock manures and associated beddings has a long history of safe usage as an important source of fertilizer for human food production.

2. There are a variety of benefits associated with the use of poultry litter fertilizer and its application is highly regulated in the IRW.

3. Approximately 65 % of the land area of the IRW is devoted to farming (agricultural production).

4. Poultry production is one of seven primary farming enterprises that exist in the IRW.

5. Cattle production makes use of most of the land area devoted to farming enterprises. About 75 % of the farms produce beef cattle.

6. Fertilization of pastures and crops within the IRW is dependent upon availability and cost effectiveness of organic (animal manures) and inorganic fertilizer materials.

7. There are numerous sources of animal and human fecal material and its associated bacteria in this watershed.

8. Cattle spend nearly half the time in and near riparian areas while wildlife spend even more time there. The streams serve as the water supply for some of the livestock and most of the wildlife adding to stream-bank erosion and direct deposition of fecal material.

9. Cattle wet manure **production** in the IRW represents about 61 % of the total animal manure while poultry is about 25 % of the total. Cattle manure is deposited directly to the land surface while poultry manure is deposited on an organic matrix in the poultry house and is allowed to undergo drying and fermentation before it is available for land application as fertilizer or export.

10. Fecal bacteria are present in wet (hydrated) manure but die as they are exposed to drying and sunlight.

11. Poultry litter, swine lagoon contents and composted dairy cattle manure contains less dry weight and fecal indicator bacteria than fresh manure. After fermentation and drying poultry manure as litter represents approximately 11 percent of the total produced while cattle manure represents about 77 percent. Fecal *coliform* bacteria content in poultry litter manure is reduced to about 6 percent of the total at the time of harvest while cattle production represents about 90 percent of the total produced at that point.

12. Cattle, horses and wildlife concentrate manure within or near the riparian areas and some manure is deposited directly into streams.

13. Poultry litter produced in the IRW annually has been estimated within a range of 231,000 to 354,000 tons. A middle (near average) estimate is about 295,000 tons.

14. At least 70,000 tons of poultry litter is currently exported annually from the IRW, 23,600 tons are carried over to the next production cycle and 18,000 tons are stored before usage.

15. Of the phosphorus (P) in livestock and wildlife manure produced in the IRW, cattle contribute about 46 percent of the total that is directly deposited on the fields and in the riparian areas while poultry litter available for application represents about 35 percent of that total and it is not applied to the riparian areas.

16. Laws and regulations are in place to govern poultry litter usage as fertilizer. The state has produced no evidence that cattle producers in the IRW have violated the laws and regulations pertaining to the application of poultry litter.

17. There are more than 11,000 property owners in the IRW with 5 acres, or more, but only about 4,500 identify themselves as being engaged in farming. The remaining 6,500 non-farmers have little regulatory oversight relative to the way they manage their properties. Only 1,580 per year have submitted soil samples for assay over the past three years.

18. Confinement poultry businesses are highly regulated by the EPA, FDA and USDA with additional state oversight. For EPA purposes they are identified as AFOs (animal feeding operations) or CAFO's (confined animal feeding operations).

19. There is no evidence that because of the use of antibiotics in poultry production there are concomitantly resistant pathogenic bacteria in the waters of the IRW.

20. The presence of steroid hormones in surface waters in the IRW in parts per billion or trillion concentrations does not suggest that poultry are the source. Hormones are not used as growth promotants in poultry production and all animals, birds, and humans produce and excrete hormones.